APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,388	12/07/2003	Paul M. Buxton	TAI.0800	4630

7590 02/06/2006		EXAMINER
Daniel J. Noblitt		KHUU, HIEN DIEU THI
Noblitt & Gilmore, LLC		
Suite 6000	ART UNIT	PAPER NUMBER
4800 North Scottsdale Road	2863	
Scottsdale, AZ 85251		

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/730,388	BUXTON ET AL.
	Examiner	Art Unit	
	Cindy D. Khuu	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>23 November 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-50</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-10, 12-23, 25-36, 38-48 and 50</u> is/are rejected.

7)☒ Claim(s) <u>11, 24, 37 and 49</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>03/26/04</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 03/26/2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it does not include a publication date for all Non-Patent Literature Documents. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 14 are provisionally rejected under the judicially created doctrine of obviousness-type

double patenting as being unpatentable over claims 1 and 20 of copending Application No. 10/367,355

(Tabor). Although the conflicting claims are not identical, they are not patentably distinct from each other

because Tabor anticipates the claimed invention as follows:

Instant Application 10/730,388	Co-Pending Application 10/367,355
1. A test system, comprising: a tester configured to test <u>a set</u> of components and generate test data for <u>the set</u> of components, wherein the components are fabricated in accordance with a fabrication process; and a <u>diagnostic system</u> configured to receive the test data from the tester and automatically analyze the test data to identify a characteristic of the fabrication process for the components.	20. A test system, comprising: a tester configured to test <u>at least two sets</u> of components and generate <u>at least two</u> datasets of test data, wherein components from each set of components correspond to components in other sets of components; and a <u>composite analysis element</u> configured to analyze the test data for <u>common</u> characteristics among the corresponding components.
14. A test data analysis system for analyzing test data for a set of components fabricated and tested using a fabrication process, comprising: a <u>memory</u> for storing the test data; and a <u>diagnostic system</u> having access to the memory and configured to identify a characteristic of the fabrication process based on the test data.	1. A test system, comprising: <u>a storage system</u> configured to store test data for at <u>least two</u> datasets of test data for at <u>least</u> <u>two sets</u> of components; and a <u>composite analysis element</u> configured to analyze the test data for <u>common</u> characteristics among the datasets.

*Underlining claims are differences between Instant Application and Co-Pending Application.

The Co-Pending Application teaches at least two sets of components, which inherently comprises

a set of component. The Co-Pending Application does not explicitly teach of a diagnostic system, however

it teaches of a composite analysis element that also configures to analyze the test data. The Co-Pending

Application does not explicitly teach of a memory, however it teaches of a storage system that also

configures to store test data.

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims

have not in fact been patented.

<center>**Claim Rejections - 35 USC § 102**</center>

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-8, 14-21, 27-34, and 39-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Sheppard et al. (5,130,936).

With respect to claims 1, 27, and 39, Sheppard discloses a method and apparatus comprising: a tester (**Column 5: Line 53**) configured to test a set of components (**Column 5: Line 65**) and generate test data (**Column 6: Line 5**) for the set of components, wherein the components are fabricated in accordance with a fabrication process; and a diagnostic system (**Column 5: Lines 61-62**) configured to receive the test data (**Column 5: Line 54**) from the tester and automatically analyze the test data (**Column 5: Line 57**) to identify a characteristic of the fabrication process (**Column 6: Line 64**) for the components.

With respect to claims 2, 15, 28, and 40, Sheppard discloses a method and apparatus wherein the test data comprises <u>at least one</u> of electronic wafer sort data, data derived from electronic wafer sort data, electrical test data (**Column 6: Line 5**), bin map data, and outlier data.

With respect to claims 3, 16, 29, and 41, Sheppard discloses a method and apparatus wherein the diagnostic system is configured to provide a corrective action suggestion based on the identified characteristic (**Column 22: Lines 39-41**).

With respect to claims 4, 17, 30, and 42, Sheppard discloses a method and apparatus wherein the diagnostic system comprises a pattern recognition system configured to recognize a pattern in the test data (**Column 19: Line 4**).

With respect to claims 5, 18, 31, and 43, Sheppard discloses a method and apparatus wherein the pattern recognition system is configured to compare the recognized pattern to a known pattern associated with the characteristic (**Column 3: Lines 65-68**).

With respect to claims 6, 19, 32, and 44, Sheppard discloses a method and apparatus wherein the pattern recognition system comprises an intelligent system configured to automatically learn an additional pattern based on the recognized pattern (**Column 8, Line 38**).

With respect to claims 7, 20, 33, and 45, Sheppard discloses a method and apparatus wherein the pattern recognition system comprises a classifier configured to classify the recognized pattern according to a known pattern (**Column 12: Lines 14-19**).

With respect to claims 8, 21, 34, and 46, Sheppard discloses a method and apparatus wherein the classifier comprises a neural network (**Column 19: Line 7**).

With respect to claim 14, Sheppard discloses a method and apparatus comprising: a memory for storing the test data (**Column 6: Lines 13-14**); and a diagnostic system having access to the memory (**Column 6: Lines 8-10**) and configured to identify a characteristic of the fabrication process based on the test data (**Column 6: Line 6**).

Claims 1, 14, 27, and 39 are rejected under 35 U.S.C. 102(a) as being anticipated by Gorin (6,442,499).

With respect to claims 1, 27, and 39, Gorin discloses a method and apparatus comprising: a tester (**102**) configured to test a set of components (**106**) and generate test data for the set of components, wherein the components are fabricated in accordance with a fabrication process; and a diagnostic system

(100) configured to receive the test data from the tester and automatically analyze the test data (104) to identify a characteristic of the fabrication process (Column 6: Line 54) for the components.

With respect to claim 14, Gorin discloses a method and apparatus comprising: a memory for storing the test data (108); and a diagnostic system (100) having access to the memory (108) and configured to identify a characteristic of the fabrication process based on the test data (Column 4: Line 11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9-10, 12-13, 22-23, 25-26, 35-36, 38, 47-48, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheppard et al. (5,130,936) in view of Vachtsevanos et al. (US 2002/0054694).

Sheppard teaches all the claimed limitations as discussed above except for:

With respect to claim 9, 22, 35, and 47, a method and apparatus wherein the neural network comprises a radial basis function network.

With respect to claim 10, 23, 36, 48, a method and apparatus wherein the pattern recognition system includes a feature extractor configured to extract a feature from the test data associated with the pattern.

With respect to claim 12, 25, 38, and 50, a method and apparatus wherein the feature extractor is configured to extract at least two features from the test data, and wherein the pattern recognition system further comprises a feature selector configured to select fewer than all of the features for analysis.

With respect to claim 13, and 26, a method and apparatus wherein the feature selector operates in conjunction with a genetic algorithm.

However, Vachtsevanos teaches the following:

With respect to claim 9, 22, 35, and 47, a method and apparatus wherein the neural network comprises a radial basis function network (**Page 3: Paragraph 0027**).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Sheppard with the teachings to include a radial basis function network as disclosed by Vachtsevanos for the purpose of classification accuracy tasks and function approximation.

With respect to claim 10, 23, 36, 48, a method and apparatus wherein the pattern recognition system includes a feature extractor configured to extract a feature from the test data associated with the pattern (**Page 13: Paragraph 0180**).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Sheppard with the teachings to include a feature extractor as disclosed by Vachtsevanos for the purpose of determining what aspects of the input signal should be isolated for application to the classifier.

With respect to claim 12, 25, 38, and 50, a method and apparatus wherein the feature extractor is configured to extract at least two features from the test data (**Page 14: Paragraph 0189**), and wherein the pattern recognition system further comprises a feature selector (**Page 13: Paragraph 0184**) configured to select fewer than all of the features for analysis (**Page 13: Paragraph 0181**).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Sheppard with the teachings to include a feature selector as disclosed by Vachtsevanos for the purpose of correlating the features of the signal to each other that represent the particular defects known to exist in the products produced by the process.

With respect to claim 13, and 26, a method and apparatus wherein the feature selector operates in conjunction with a genetic algorithm (**Page 11: Paragraph 0159**).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Sheppard with the teachings to include a genetic algorithm as disclosed by Vachtsevanos for the purpose of ranking and identifying the data error measurement.

Allowable Subject Matter

Claims 11, 24, 37, and 49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Prior art fail to teach:

With respect to claim 11, 24, 37, and 49, a method and apparatus wherein the feature extractor calculates at least one of a mass, a centroid, a geometric moment, and a moment of Hu based on the test data.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed 11/23/05 have been fully considered but they are not persuasive.

During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)

With respect to the 35 U.S.C. 102(b) rejections, Applicant argues that Sheppard reference mentions 'components', which is referring to the components of the 'diagnostic tester' and not any components under test.

Examiner's position is that Sheppard reference mentions of the diagnostic tester (30) configured to analyze the nature or condition of system 'A' (Column 6, lines 41-42). Sheppard does not explicitly stated 'a tester configured to test a set of components', however by definition a 'system' is a collection of components organized to accomplish a specific function or set of functions as also stated in Sheppard's reference (system with plurality of functional components; Column 7, lines 6-7).

Applicant further argues that Sheppard reference does not disclose of analyzing the test data to identify a characteristic of the fabrication process for the components.

Examiner's position is that Sheppard does state the tester determines the nature or condition of system A for faults and malfunctions in manufacturing processes (Column 6, lines 63-64).

Applicant further argues that the electrical test signals in Sheppard reference are not test data for the components to be tested.

Examiner's position is that Sheppard clearly stated that corresponding to the electrical test data inputs relating to predetermined parameter of system 'A', the tester performs the diagnostic analysis (Abstract, lines 2-3; Column 6, lines 5-10).

Applicant further argues that 'correction term' does not amount to a corrective action suggestion based on the identified characteristic.

Examiner's position is that Sheppard does state of a 'corrective action' where the diagnostic tester determines the sufficiency of the testing that has taken place and produces an output signal indicative of whether sufficient test data has been evaluated to declare a diagnosis (Abstract, lines 10-14).

Applicant further argues that Sheppard reference does not disclose the neural network that recognizes patterns in test data.

Examiner's position is that Sheppard clearly stated that a neural network is trained to recognize patterns in the levels of certainty indicative of whether sufficient test data has been evaluated to declare a diagnosis (Column 19, lines 4-5 and 59-63).

Applicant further argues that Sheppard mere mention of 'intelligent diagnostic systems' does not provide an anticipating disclosure of the limitations that a pattern recognition system comprises an intelligent system.

Examiner's position is that Sheppard clearly stated that any conventional method can be used to analyze the test data. For examples of commonly used diagnostic approaches include so called 'intelligent' systems such as rule-based expert systems (Column 8, lines 6-14).

Applicant further argues that Sheppard reference does not cite of a pattern recognition system comprises a classifier to classify the recognized pattern.

Examiner's position is that Sheppard clearly stated that the neural network is configured to retrain for different diagnosis (classification) problems (Column 19, lines 7-10).

Applicant further argues that Sheppard reference does not require a neural network perform the classifier to comprise or the classification of the recognized pattern.

Examiner's position is that Sheppard clearly stated of a neural network trained to recognize patterns (Column 19, lines 4-5 and 59-63) and further configured to retrain for different diagnosis (classification) problems (Column 19, lines 7-10).

With respect to the 35 U.S.C. 102(a) rejections, Applicant argues that Gorin reference does not disclose a diagnostic system configured to analyze the test data to identify a characteristic of the fabrication process for the components.

Examiner's position is that Gorin discloses a method and apparatus comprising: a tester (102) configured to test a set of components (106) and generate test data for the set of components (Column 4, lines 6-8), wherein the components are fabricated in accordance with a fabrication process; and a diagnostic system (100) configured to receive the test data from the tester and automatically analyze the test data (104) to identify a characteristic of the fabrication process (Column 6: Line 54) for the components.

Applicant further argues that Gorin references does not disclose of a diagnostic system to identify a characteristic of the fabrication process based on the test data.

Examiner's position is that Gorin discloses a method and apparatus comprising: a memory for storing the test data (Column 3, line 14); and a diagnostic system (108; a test system to analyze and identify potentially defective components) having access to the memory (stored the resulting output signals; Column 4, line 11) and configured to identify a characteristic of the fabrication process based on the test data (Column 6: Line 54).

With respect to the 35 U.S.C. 103(a) rejections Examiner maintains positions as discussed above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Sun (US 6,240,329).

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy D. Khuu whose telephone number is (571) 272-8585. The examiner can normally be reached on M-F, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CMK 2/1/06
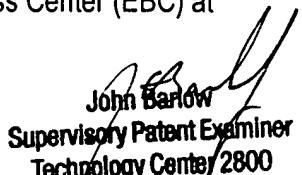
John Barlow
Supervisory Patent Examiner
Technology Center 2800